from his friend
S. Jackson

A

LECTURE

ON

MEDICAL EDUCATION,

INTRODUCTORY TO THE COURSE OF THE

INSTITUTES OF MEDICINE,

IN THE

UNIVERSITY OF PENNSYLVANIA,

FOR THE SESSION 1833–4.

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University of Pennsylvania, November 23d, 1833.

DEAR SIR—

AT a meeeting of the Medical Class of the University of Pennsylvania, held this day, it was unanimously resolved, that a copy of your able and eloquent Introductory Lecture be requested for publication.

We, a committee appointed for that purpose, tender you their request and hope it will meet with your acquiescence.

With great esteem and respect, we have the honour to be,

Yours, &c.

[Signed] SAML. C. BELLAMY, of North Carolina,
P. K. HULL, of Virginia,
L. B. POWELL, of North Carolina,
Committee.

TO SAMUEL JACKSON, M. D.

Philadelphia, November 23d, 1833.

GENTLEMEN—

The request of the Medical Class of the University of Pennsylvania, for the publication of my Introductory Lecture, expressed in terms more flattering than merited, and communicated to me by you, it would be ungracious in me to refuse.

I am gratified to find that the subject has attracted the attention of the class. It is one that deeply concerns the present and future prospects, standing, and interests of the profession; it involves also the welfare of the community. The time has approached when some action must be had on it.

A copy of the Lecture will be at your disposal in a few days.

With great respect, I am truly yours, &c.

[Signed] SAMUEL JACKSON.

To Messrs. SAML. C. BELLAMY,
P. K. HULL,
L. B. POWELL.

INTRODUCTORY LECTURE.

GENTLEMEN—

THE commencement of man's existence is in the feebleness of infancy; he passes through the light-hearted and thoughtless period of childhood and youth with powers gradually expanding; acquires in manhood the development of his energies, ripening into the fulness of maturity; and, in his natural career, sinks into the decrepitude of age, when, the forces of nature expended, he fulfils the law of his destiny—the mandate of his Creator—terminating his being in this world, by the dissolution of his mortal frame.

In this progress of individual being, we are presented with the prototype of all human relations.

The social condition of our race, in its beginning, was powerless and dependent. It has no memorial, for it was incapable of perpetuating its events or its opinions; all are buried in the profound obscure. It opens in a period of fable and superstition: for ignorance rashly undertaking to explain every thing, is wild and unregulated in its conjectures, which it substitutes for facts.

The ungoverned savage is gradually moulded into civilized man; the rude polity of barbarian tribes is slowly shaped into the complicated machinery of refined and cultivated communities: and it is in the revolutions of distant ages alone, that we can rationally expect, that the perfect civilization of man—the exaltation of his intellectual and moral faculties—the ascendency of his reason over his brute passions and organic instincts,—will be finally consummated. For, although we are accustomed to account the present as a highly civilized state, it is impossible calmly and

impartially to regard it, and not be struck with the numerous features of barbaric character and feudal origin, still stamped on the customs, opinions, and governmental institutions of the age.

While the nobler and more exalted faculties are made subservient to the inferior and abasing; while violence is the substitute for reason, and blows and arms are employed as arguments; while differences of opinion and the collisions of interests are determined on the battle field, by the conflicts of opposing hosts; while right, and truth, and justice are interpreted, and decided by slaughter, havoc, and rapine; while the energies of society, the wealth of nations, and the force of governments, are directed, almost exclusively, to the devising and the perfecting of the means for the destruction of the race, and not to its education, its refinement, its moral and intellectual advancement—to the illustration of truth and the exposition of error,—boast as we may, impartial truth will pronounce, that, though a reasoning, man is not yet a perfectly rational being;—that, though less a savage, he has not yet entirely passed beyond the limits of the savage state. The destined perfection of which he is susceptible, can only be seen dimly figured in the far distant and obscure vista of remotest time. It can only be expected, when the good and the beautiful, emanations of divine truth, occupying the soul of man, the empire of reason will reign supreme, and he shall be the master, not the slave of his appetites, propensities, and passions.

For then, from long and profound cultivation, knowledge being immensely expanded and strictly accurate, false opinions will be rarely formed—and error, in the blaze of intellectual light, will scarcely find a spot wherein to harbour. Let not this conjecture be looked on as wholly visionary. Though the organization of man will always remain as it is, yet, as knowledge is progressive and capable of perfectibility, and man is what knowledge makes him, he is, through this medium, susceptible of a state of social perfection, of moral and intellectual exaltation, of which it would

be deemed wild enthusiasm to utter the thoughts that rise before the imagination. For a moment let us endeavour to conceive what vast results would flow, if the enormous sums annually expended by the nations of the world in the prosecution of wars, the maintenance of armies and fleets, the erection and support of fortresses, and all the other means and appliances of destructive warfare, were appropriated to the cultivation of mind, the improvement of knowledge, the general diffusion of superior education, to the moral advancement of man—What, in the course of a few centuries, would he be? Certainly no more the creature he now is, than would be the savage of our wilds, could philosophic truth be made to penetrate the darkness of his intellect. Too surely the destiny of our race is not yet accomplished. But, this is a digression into which insensibly we have strayed, and from which it is now time to turn our attention, and pursue the more immediate subject of our discussion.

All the arts and the sciences, the creations of human genius, instigated by intuitive tastes or instinctive wants, exhibit the same order of progression. Rude and undigested in their origin, they tend towards or attain perfection with different degrees of rapidity —some arriving at their complete development, while others continue to struggle with the difficulties that embarrass their progress.

Our science presents this character. In its primitive state, it did not form the object of a distinct profession, but was, even as we witness often at the present period, a common pretension claimed by every one, based on the grossest empiricism. We are told by Herodotus, that the sick were often exposed on the highways, that the passers-by might suggest what means they had known to be successful under similar circumstances. Strabo relates that the same custom prevailed in Spain. More advanced, it became the appanage of the Priesthood, who acquired experience from the numerous sick who crowded the temples dedicated

to the healing deity, from whose immediate agency they expected to derive succour, and to secure their safety.

Devoid of self-sustaining principles, medicine was compelled to seek support from collateral aids. For a time, it reposed in the embraces of Grecian philosophy, and was indebted for its fundamental dogmas to the doctrines of the various schools, constituting the speculative science of that highly endowed race, and intellectual age. Passing thence to the modern era, medicine was plunged into the depths of darkness and superstition that engulfed the human understanding. Cabalism, theosophy, magic and astrology, furnished the basis on which it was erected. Escaping from these absurdities, it sought refuge in, and looked for assistance from the visionary speculations of the alchemists. It then became a department of physics and mechanics—was next allied to the wildest metaphysics, and connected with the rudest chemistry. It has been alternately a doctrine of humoralism, solidism, vitalism, and always more or less deeply imbued with dogmatism and empiricism.

From this imbecile dependency on other departments of science for its principles, medicine is now rapidly escaping. It has assumed in the circle of the sciences an independent station. It is forming the body of its science, looking for and attempting to establish its fundamental dogmas in the co-ordination of its own facts; first verifying the truth of its facts.

Medicine, you then perceive, gentlemen, long as it has been cultivated, is not a perfected science. Along with the civilization of our race, it lags far in the rear of that more glorious, it may be said, ineffable condition, to which in the progression of time it will attain. You must not, therefore, in the pursuit of medical knowledge, repose implicit faith in the opinions, the dogmas, or even the facts you will learn. It is better to regard every thing with the sceptic's eye. Our science is one of investigation. You are here for the purpose of learning all that is known of

medicine at the present day; of being taught all that investigation, carried up to the actual period, leads us to believe is true; but you are not bound to receive it as proceeding from the hallowed oracles of inspired truth.

In these halls you appear for the first time on the stage of life, in a new character. You have ceased to be scholars and pupils of scholastic institutions, with duties limited to prescribed tasks which you are bound to learn. You are the disciples of a high philosophy, at the discussions and investigations of which you now assist, and in which, finally, you are actively to partake. New duties now devolve on you, pertaining to your new character.

You have arrived at an epoch of life. You have terminated one era—you are at the commencement of another. The period and education of youth are closed—the education of manhood and the pursuits of mature life now open on you. The first should have been preparative and initiatory of the last. They are not the same in nature or intention; they must not be confounded together; and it may be important to you, in the commencement of your new career, and greatly facilitate your advancement, to place you in your proper position, and on the best route to be pursued; to point your attention to the differences between the two, and to direct your reflections on the nature of that you are now engaged in.

Education, it is too frequently, yet erroneously supposed, is the imparting of knowledge; and schools and teachers are believed to be the media of its communication—the means of its acquirement. Let any one, however, reflect, how little of the immense stores of knowledge, is, or can possibly be acquired in courses of instruction, and he must be satisfied, that such is not, cannot, and should not be the exclusive, or chief end of education, and should not be attempted. A higher and more important purpose is to be accomplished. The faculties of the understanding require, like all other faculties, for the developement of their energies, an

appropriate training; each of them is to be invigorated—the senses, perception, memory, reason, judgment,—by the exercises fitted to each; and above all, the intellect should be disciplined in those operations by which alone it is enabled to acquire sound knowledge, and is rendered capable of its noblest and greatest effort—the power to distinguish and receive truth. These are the great purposes to be aimed at in an education truly philosophical. It is not the mere possession of the senses and faculties of the mind, that confers on man the privilege of thinking, of reasoning, of judging, of knowing: he must be instructed to employ them aright; he requires to be taught to think, to call his intellect into action, to reason, to reflect, to judge, to know for himself. The number of mankind who thus act is small indeed. In the language of the psalmist it may truly be said of them—"Eyes have they, but they see not; they have ears, but they hear not;" and it may be added, with understandings, yet they understand not.

The duty of thought is almost universally abandoned to a few. The dicta, the phrases of some worshipped leader, not always the most meritorious or deserving of confidence, and which often are not even comprehended, are implicitly adopted by the multitude, —are made the rule of conduct, the standard of excellence, and "anathema" is cried upon all who pronounce not the shibboleth of a sect, or do not answer in the watchwords of contending factions and of wrangling schools.

The history of mankind presents a series of delusions, that have ruled his intellect, that have made him a slave to the passions, the prejudices, or the designs of a few; that have stifled knowledge and extinguished truth; that have arrested the progress of civilization, and almost created a doubt as to the universality of the attribute of rationality. Men have met and fought in fields of carnage, have persecuted, have destroyed one another, like ferocious animals, for differences of opinions and dogmas, maintained

with a blind fury, which, in subsequent periods, are universally rejected as too gross for credence. These are the fruits of error —the consequences of a false and defective system of education, leaving the mind undisciplined and incapable of acting for itself, devoid of the means, habits and processes of ratiocination; its irregular energies abandoned to the direction and excitement of those who are disposed to employ them for their own advancement and interests. Man, then, loses his individuality, and is but a component part of a physical mass, moved and governed by exterior agency.

The important object in education, should be to avert this unhappy state of intellectual nullity—to form the habit of investigation, to conduct the mind to the comparison of things, estimating their similitudes and differences, arranging them in their respective and appropriate classes, and expressing them in precise formulæ. A just education is much less the communication of knowledge, than instruction in the methods of acquiring knowledge—by examination and reflection—experience and induction. Whoever is desirous of mastering the difficulties of a science, must rely chiefly on his own instruction—dependence on others, will ever throw him into a sciolism, always inefficient, often contemptible. He must labour in his own vineyard, who would be rewarded with abundant harvests, and would gather the choicest fruits.

The education you have just completed, it has already been remarked, is preparatory. It embraces two objects: the first is language, or the signs representing or communicating simple ideas—that is, words; and the artifices by which words are combined, arranged and modified so as to express the operations of the intellect in the formation of reflected and compounded ideas—the distinctions between them, and the formulæ for their expression—or what is called grammar and logic. This department of education is fundamental,—essential to the completeness of every

other; is vastly important to a perfect method of study, and the acquisition of knowledge.

It is language that pours the mind of one man into that of another. It paints the thought, gives it a palpable existence, an individuality, by which it may be seized on and appropriated. It is in language that the mind finds immortality, while the body perishes in the dust. It is language that preserves to us the thoughts of the great, the learned, the wise, the good of all ages; making them heir-looms of the race, descending from generation to generation, transmitting lessons of wisdom and of virtue, enlightening, instructing, benefitting, elevating, and improving their species. But, for the communication of ideas for useful purposes and an accurate comprehension of ideas, language must be the exact representation of the idea; it should be clear, precise, simple, and the value of each word be express, limited, and definitely explained. Many of the disputes that vex mankind, and fill the world with discord and embittered feelings, turn merely on words or phrases, taken, without the parties being aware of it, in meanings entirely different. Words, as Burke most justly observes, are things.

A second object embraced in this preliminary education, is the power of numbers—the equations of magnitudes—the laws of the forces imparting motion to bodies—that is, arithmetic and algebra, or calculation; geometry and mechanics, or collectively, mathematics in the fullest acceptation of the term.

Education thus composed, is a series of exercises adapted to every faculty, by which, systematically pursued, the organization of the mind is corroborated, and its powers fully displayed. By these exercises are its wild and irregular impulses restrained, while they control its fitful and wasteful sallies; they direct its forces and regulate its movements by a severe and exact discipline; they harden it to toil, and qualify it for application; they prepare it to grapple with the abstrusest subjects of philosophy, and for the

achievement of noblest conquests over opposing difficulties; they arm it with power to drag from the deepest recesses of nature her most hidden secrets, and crown its triumph with the never fading chaplet of immortal truth.

Such has, or should have been, the preparatory education, introductory to the scientific and profounder education, you are about to commence. The more complete this has been, the more thoroughly you have been imbued with its principles, and have deeply imbibed its spirit,—the fewer difficulties you will encounter to embarrass your course; the more easily you will clear the obstacles that oppose your progress; the loftier the station you will be enabled to reach in your profession; the brighter your fame; the richer your reward.

You must remember, gentlemen, that it is not a mere art—a collection of practical maxims and precepts, handed down from generation to generation, requiring but a limited degree of intelligence to put into successful operation, which you come here to commit to memory as a scholar does his rules. You devote yourselves in these halls to the acquisition and cultivation of a science —of a deep philosophy—composed of facts developed by painful and laboured investigation; and principles, determined solely by critical analysis and rigid logical induction, and which can be applied only under the guidance of extensive information, and a sound, discriminating, and disciplined judgment.

The course of study you have selected, and on which you now enter, is a medical education. You propose to perfect yourselves in the knowledge of the most difficult of the practical sciences, created by the inventive genius of man, for his defence against the most desperate of the evils that assail his existence, and blast too frequently his prospects of happiness, in this state of being. It is difficult, from the immense multiplicity, the complexity, and obscurity of its facts, and the recondite nature of its principles. You aspire to the attainment of a most gifted character, and the

assumption of a deeply responsible office. You seek to become a practitioner of medicine—the seer who looks into, comprehends, pronounces on, and regulates the laws and phenomena of vitality —the pilot who guides the frail bark of human life in safety through the myriads of difficulties that beset, the perils that environ, and the dangers that threaten it on every side.

Let us now, gentlemen, survey the field of your future exertions; the subject which is to be the great concern of your hereafter existence. It demands your most deliberate consideration. Contemplate it well—comprehend thoroughly its nature. You will, then, be enabled to understand, adopt, and pursue a system, that will greatly lighten your labours, abridge the period of your exertions, and confer on you a proficiency, full and complete.

Medicine, as every other science, is divisible into two portions, and may be treated in two different manners: The one historical, the other philosophical. The first, or historical division, embraces the progress of the science, in each department, from its inchoation to the present time, and exhibits the gradual evolution of facts, the various speculations, hypotheses, theories and systems, that have alternately prevailed, and enjoyed a short-lived reign. This information is of the greatest utility. It exhibits a view of the errors of those who have preceded us; and warned by their example, we are taught to avoid the mistakes that proved fatal to them; we are made to witness the struggles of powerful intellects, shackled by the bondage of false methods, vainly attempting to grasp at truth. It presents us with all that has been tested by the ordeal of time, of observation, and experiment; we learn to distinguish the spurious and false in fact, to know the approved and substantial; we are spared the mortification of proposing as original, what has been long known, and of adopting as true, errors refuted, condemned, and exploded. The immensity of the details comprehended in this division of the science, necessarily excludes them from courses of lectures. They are not to be found

in the text books and manuals, too frequently alone perused by the student, and the sole library of the practitioner, and can be acquired only by a diligent review of the standard writers of the science.

Although this first or historical branch, is exceedingly useful, and by no means to be neglected, it is less important, especially in prelections, (which ought to be chiefly exegetical of a science,) than the second or philosophical division.

In this branch, are included two objects—1st, principles—2d, the verified and incontestible facts of the science. On a knowledge of both, depends its successful application to practical purposes. The principles of a science are its animating spirit; the only rational object of its cultivation is their establishment. Facts are to be investigated and verified by observation and experiment —the only means to be relied on. But the attestation and verification of facts, are no otherwise useful, than as they enable us to determine principles, and to institute theories; and, if we err in theories, it is, either that the facts are imperfectly known,—or, what is furnished to us as facts, are false. When facts are confirmed, a philosophic genius never fails in its generalizations, and soon establishes a sound theory of universal applicability; offering the solution of myriads of phenomena. A genius of this character, immediately perceives the similitudes and dissemblances of things; embraces, analyzes and distinguishes the slightest particularities of objects; comprehends the entire mass, in its view; recognizes the points in which many million of phenomena meet in perfect accordance; and deduces, from a study of their general relations, their reciprocal connection and mutual dependence, the causes or laws regulating their production. With this concentration of the faculties, directing the senses to the perception and examination of substantiated facts; their arrangement and classification under appropriate heads; their generalization, or reference to general points of view, are readily accomplished. The facts are then in-

contestible, the theory is completed, and the science rapidly tends to perfection, as a speculative philosophy and a practical art.

Principles and facts, in a science, are most intimately associated. The facts, ascertained by observation and experience, are the materials of the science; but they are not science. It can have no existence until principles are evolved, or theory is perfected. The mass of facts made known through the medium of the senses, must be arranged in order by the reflecting powers of the mind; and the connection of causality must be discovered among them, before they can be recognized as constituting science. Facts alone, are a chaos susceptible of form, but a mere void, until the creative spirit of philosophy, breathes on the irregular mass of commingled elements: then, light and truth burst on the profound obscure; form, existence, order, harmony, rise successively into being, and science owns its birth.

In all science we observe, then, that principles are its beginning, and its end; and facts are to be studied, observed and verified, for no other purpose than the elucidation of principles, the only unerring guide to a correct practice. He who would undertake to make a practical application of precepts, yet is utterly ignorant of principles, would unquestionably commit the most melancholy blunders, when unexpected complications created the necessity for new combinations; and in medicine, such complications and exigencies, requiring promptness and resource, are of daily occurrence. The first object, therefore, in the study, and in the tuition of a science, it is obvious, should be, the knowledge of its principles. Yet, it is unhappily true that, in all the systems of education, principles, if not entirely contemned and denounced, are the last to be thought of; and when they become the subject of investigation, the mind, surcharged with prejudices, and stuffed with conceits, is incapable of receiving simple truth.

"What sentence," to use the language of a celebrated writer, "shall we pronounce on a system, which thus reverses the clear

and evident order of things? which overloads the memory with facts, and these frequently of a doubtful description; while it leaves the mind entirely in the dark with regard to principles, that would alone render the heterogeneous mass of any advantage or avail." It errs still more grossly, in instilling too profound a reverence for celebrated names of past times, setting up authority for truth, instead of truth for authority. It bestows learning, but not wisdom; and "learning without knowledge," as the same eloquent and judicious writer remarks, "is but a bundle of prejudices; a lumber of inert matter, set before the threshold of the understanding, to the exclusion of common sense. Pause for a moment; recall those cotemporaries who are generally considered learned men and well-informed. Tell me, has their information or their learning made them a whit the *wiser?* if not, then, it is only sanctified ignorance. Tell me, if, with them, names are a sanction for opinions; authorities are the equivalents of truth, and quotations the representatives of axioms. Then, all they have learned only serves as an excuse for all they are ignorant of. The great, the fundamental error of education, is to occupy the mind with antiquated authors, and then to try the principles of the present day, by the authorities and maxims of the past." This method is most injudicious and unwise. Man commenced his social existence, in all its relations, in ignorance and barbarism. He is endowed with faculties that empower him to improve, to ameliorate, to elevate his condition. But his first steps, in the profound darkness which surrounds his intellect, are uncertain, wandering and faulty. He escapes from the errors inevitable to his state, by slow degrees; he breaks from the entanglements of false opinions and systems, only with painful and protracted struggles. The older are opinions, facts and doctrines, the more probable they are untrue, the less reliance is to be placed on them, unless confirmed by modern observation, experiments and principles. It is not sufficient to sustain an opposite opinion, that instances may be cited of powerful intellects

that divined some scattered truths, verified by recent investigations. They were happy guesses, treasures accidentally found, and not the result of systematic proceedings, which can be adopted with advantage. As well might we be summoned to bow in reverence and confess the inspiration of the Pythoness, because, from the tripod, in her wild delirations, she uttered occasionally the words of truth.

Dismiss, then, gentlemen, from you, undue reverence for mere authority. Let it not take deep root in your minds, or they will be incapable of admitting new truths, conflicting with adopted opinions. Scepticism is no crime in medicine. We acknowledge no oracle but nature. Whatever doctrine you find in books, or hear in lectures, subject it to the ordeal of observation, experiment and reason. If it cannot be referred to some established principle, should you not dismiss it as unsound; at least hold it in doubt for subsequent consideration.

The course that will be pursued in these lectures, will be the reverse of the ordinary method. Passing by the mere learning of the science, the doctrines and opinions of past periods, we shall confine ourselves to knowledge—to that only which is practically useful. Our exclusive object will be, as alone essential to a course of instruction, the doctrines of the present day, the verified facts and the principles of the science. After the completion of the course, then, having access to the well-stored libraries of this city, rich repositories of all the treasures of medical literature, you can glance over all that has passed away, as researches chiefly curious, yet not without a measure of utility.

I have dwelt with no little emphasis on facts and principles, as alone constituting knowledge, and forming the entire end of science. But you have a right to demand, from so much stress being laid on these points, what is meant by facts, what are principles? It might, to the superficial, seem strange, that any doubts could be entertained on these subjects. Yet, I am persuaded,

that, simple as they appear, they are not properly understood; otherwise it would not so frequently occur, that what is given for facts, are not facts; and what is enunciated as a principle, is not a principle.

What, then, I mean as a fact, and wish so to be understood when I employ the term, is a simple, indivisible phenomenon, presented by a natural object, ascertained by the senses from careful observation, attested by the experience of thousands, the same in all ages, and verified by reiterated experiments. That alone which embraces these conditions, can be regarded as a fact in positive science, or be admitted in a strict philosophy. How few of the facts of medicine have been of this character. A single observation occurring in a single case, often a mere casual incidence, is hastily promulgated as a fact, and from it, is rashly deduced a practical precept. This loose unphilosophical proceeding, has overwhelmed the science of medicine with false facts. It is they which have retarded its onward march of improvement, infinitely more, than false theories. On this point we have the testimony of Dr. Cullen. In medicine, observes the Edinburgh professor, there are infinitely more of false facts, than false theories.

Having shown what is to be understood by a fact, let us now proceed to ascertain what we mean by a principle.

The phenomena of natural bodies, exhibit common points of resemblances and dissimilitudes, ascertainable by the senses. They are, thus, distinguishable from each other, and are to be separated into various divisions according to their nature. All the phenomena of any department, which, in their essential circumstances, are exactly the same, have the same cause, and constitute but one fact, which is the first in that series of phenomena. This primary fact, is, then, a generalization of innumerable facts; the concentration of a thousand facts into one: and this general fact is a principle from which, all the series of phenomena below it, depend immediately or secondarily. Each phenomenon is in

itself an effect of one which has preceded it, and is a cause of that which succeeds to it. Phenomena, in this manner, form numerous series, and are capable of being expressed in formulæ. These formulæ are laws, and when they are completed by an exact arrangement of the phenomena, each in its proper connection, then a science has attained its perfected condition, and its practical calculations and proceedings are susceptible of application with unerring certainty. The progress of a science towards truth, is always the reduction of a multiplicity of facts to a few general facts or principles; from confusion and complexity, to clearness and the simple. We may receive it always as prima facie evidence, that the route we are pursuing, is the road to truth, and be induced to persevere in our course, when we find such to be its results; that we are escaping from a multiplicity of details, obscuring the sight, and opening on a less obstructed view; that the immense host of facts in which we found ourselves lost and bewildered, gradually settle down into regular form and order.

It has been the design of the preceding remarks, to enforce on you, that the acquirement of knowledge, and the discipline of the mind in its acquisition, are the main purposes of your present education, and should govern the courses of your instruction. To remove all obscurity with respect to my views or mode of understanding these subjects, it is now incumbent on me to make to you a declaration of what I regard as the proper objects of human knowledge; the subjects alone embraced in scientific perquisition.

The universe, of which man is a component part, is composed of innumerable bodies, each endowed with or manifesting certain specific properties, and holding with each other positive relations, and thus have the capacity of producing phenomena. A knowledge of the existence of these bodies, and, consequently, of the universe, is derived from the perception of phenomena by the faculty of sensation, with which man and other animals are en-

dowed. Without the senses to perceive, existences would be unknown; the creation itself a void; the harmony, beauty, and order of the world thrown away, having neither object nor design. It is the faculty of sensation, that makes creation what it is; and here we are presented with one of the most beautiful instances of the universal harmony pervading the great works of the Almighty Creator. We know the bodies of the universe, because their especial properties possess special relations with some organ, external or internal; and excite in the external senses, the specific phenomena of sight, of feel, of sound, of taste, of smell,—or, in the internal senses, awaken perception to the impressions they create, disturbing the state of being or functions of the organs. Knowledge, then, is and can be nothing else than the appreciation of phenomena by the senses, and the determination of their various relations and connections, by observation, experiment, and rigid induction.

Diversified as are the forms, and different as are the properties and characters of the bodies of the universe, none are entirely independant. The whole are connected, act and re-act on each other, producing especial movements and particular phenomena, according to their distances, the volume, form, and disposition of their atoms or particles. Throughout the mighty chain of existences, each link of being is subsidiary to the other. The universe, or bodies composing it, thus, constitute an immense extended whole, possessing the most perfect unity, incapable of the slightest disseverance in any part, without a fatal shock to all.

> "From Nature's chain whatever link you strike,
> Tenth, or ten thousandth, breaks the chain alike."

During the influence of the theological domination, which in a barbarous and darkened period of society, seized on and subjected to its control, every species of education, man was separated as a distinct being from the rest of the universe.

In pride and vanity, it was taught, that for him alone was the universe made; he was the sole end and object of creation, with which he was connected only as its lord. Thus isolated, and falsely endowed with exclusive and peculiar privileges, his organization was a useless research; the sacred form must not be mutilated; it was sacrilege to study this sanctified being, in the same manner, and subject his composition, structure, faculties and actions to be investigated and explained, by the same methods, and on the same principles, as those applicable to other beings. A just philosophy has humbled these idle and presumptuous pretensions; it has shivered into pieces this pageant idol of human pride and antiquated ignorance; and while man is recognized as the most complete and perfect type of organized beings, proceeding from the hand of the Creator, he has nothing distinct from them, excepting his more developed organization, composed of the same elements and materials of which all are constituted, even to the lowest of animated beings.

The philosopher-poet beautifully expresses the idea—

> "Nothing is foreign; parts relate to whole;
> One all extending, all preserving soul
> Connects each being, greatest with the least;
> Made beast in aid of man, and man of beast:
> All served, all serving: nothing stands alone;
> The chain holds on, and where it ends unknown."

In studying man, therefore, the particular object of our science, the same method of investigation, of acquiring knowledge and of philosophizing, is to be pursued, as with the other objects, even inanimate bodies, of the universe. That is, we are to determine by observation, the phenomena he manifests in the various organs composing his economy; we are to arrange or co-ordinate these phenomena in the order of their production and mutual dependence, for each organic element, tissue and organ; we are to form a

just valuation of these phenomena under a rigid and critical philosophy; and, finally, to express them in formulæ of the greatest simplicity and precision.

Such is the nature of the knowledge required in a philosophical education of our science. The means for the acquirement of this knowledge, cannot be indicated to you at this time, but will form the subject of a distinct lecture.

The education I have pointed out in the preceding part of this discourse,—as that which is demanded by the present improved state of science generally, and particularly of our science,—is very different from that which has heretofore prevailed. I shall not enter into any argumentative advocation of it. I shall content myself with resting it on its intrinsic and self-evident merits, and trusting to your good sense to appreciate its just value. I cannot, however, avoid exposing to you the opinion of a very able lecturer, engaged in medical instruction, in the metropolis of Great Britain, on the present system of Medical Education. It will be an evidence to you that I am not alone in the opinion I have expressed; and am actuated by no selfish and sinister motives in this denunciation of the defective character of our system of instruction; but am influenced by a thorough conviction of its inutility for the attainment of the great end of a complete medical education, such as is worthy of the science, arranged on a philosophic basis, calculated to advance and perfect our knowledge, to elevate and dignify our profession :—

"The loose, immethodical, and unphilosophic manner in which medical education has been, and is too often taught, is one of the leading obstacles which have checked its progress towards the completeness of a science. The observer of a few facts, the physician of a few patients, assuming the importance of philosophers, soon weary with tardy and laborious investigations, and find it an undertaking of more easy accomplishment, to guess at and generalize upon subjects which require much time and talent

to investigate. Hence does it happen, that more *discoveries* are often made during one year, in medicine, than the labours of two centuries can consign to oblivion. The tedious process of watching attentively, comparing cautiously, and inferring slowly, is badly calculated for an enterprising speculator, who cultivates his profession as the mechanic does his trade, and whose zenith of ambition is accumulation of wealth or the acquisition of friends. A few months spent in hearing a few lectures; as much study endured as is indispensable to escape public censure before a trifling ordeal; and as much money paid as can procure a few manuals, and secure the *entree* to the prescribed round of classes, are deemed by most students—ay, and by most parents too, a sufficient preparative for the exercise of one of the most recondite and responsible professions to which an enlightened mind can be devoted! The effects of such a jejune system of education have been a long time felt, but are only beginning to appear. Now that philosophy has overstepped the walls of chartered schools and sequestered colleges, and walks abroad in open day through every class and section of society; now that the human understanding will be no longer trammeled within the fetters of prejudice, and will not submit to the unsupported authority of imposing titles and more imposing privileges, the consequences of such a wretched system of medical instruction, cannot now remain unnoticed by the public, should even the faculty still feel inclined to encourage it. Our surgeons and physicians must cease to make merchandize of physic; medicine must be taught and studied as an inductive science, rather than as a mysterious medley of antiquated jargon; and disease must be studied and treated more in the spirit of enlightened philanthropy, than with the mercenary views of a hireling."

To this, I will subjoin a paragraph, extracted in a late number of the Lancet, from a communication in the Times, animadverting on some great absurdities committed in the evidence of several

teachers, professors, and physicians to hospitals in London, in a trial on a life insurance case:—

" We never read any reports where medical evidence is given, without blushing for the state of *medical science in England*, and being convinced that this branch of education is defective, not only as regards the inculcation of sound principles, but even in the application of undoubted facts to recognised principles. Certainly we are yet to lament the want of a well-governed school of medicine."

What, it may be inquired, is the remedy to this state of things? A reform certainly. But, in rational and highly civilized society, where the passions and interests of man, are not permitted blindly to rule, the first steps to reform, are to awaken to consciousness of existing defects; to produce a feeling of the necessity of reform, and a deep conviction of its necessity, in those whom it most concerns. The inventive talent of man, then, soon devises the best and most appropriate remedies for the evils he endures. He looks abroad, discovers the defects that defeat his schemes of happiness and amelioration; that oppose obstacles to his progress to a more improved condition; and escapes from their control, by providing a better and more perfect system. If unopposed by arbitrary power, deaf to argument, and impenetrable by remonstrance, the change is wrought slowly but surely; is the work of time, and of reason; is more finished and perfect in its details, and is accomplished in peace and safety. Improvement is effected; amelioration has been attained; knowledge has advanced; and society, benefitted in its state, marches onward to its destined perfectibility.

But if resisted in his earnest appeals for redemption from an oppressive condition, and in his aspirations for a better order of things, by inflexible prejudices, unyielding and pertinacious selfish interests, then, in political society, arise the excitements and storms of the passions, in whose wild tumults reason loses her ascen-

dency; rebellions and revolutions burst forth; the frame of civil society is rent and torn in the fierce collision; physical contests decide the questions that moral considerations, calm and rational deliberations should regulate, and can alone bring to a felicitous conclusion. In the rude commotions thus excited, and in the shock of conflicting factions, desolation is the substitute of reform, and in the place of improvement, we look aghast on a scene of ruin and destruction. The philosopher weeps over his blighted prospects of human perfection; the philanthropist sinks in despair.

The improvement and reform which the medicine of this country impatiently awaits, do not consist in the formation of *new schools*, formed on the models of old institutions, treading in the same worn-out paths, and perpetuating ancient errors and systems. It requires an entire and new re-organization of medical instruction, elevating it to the level of the science that has been lifted on the rising tide of improvement far above the base where it was originally laid, and now nearly submerged by the whelming flood. It is a work that will never be accomplished by the rivalry of personal interests. It demands for its accomplishment the abatement of old courses, now too much considered, to their proper station; the introduction of new subjects, new branches and departments, of modern discovery and creation, and which are now composing the body of the science, yet which, unhappily, are so little known among us, that their names even to many sound strangely on the ear. With these changes is essential, the prolongation of the period of instruction.

It is true, that in such a change, new sacrifices, new duties, new tasks, new labours will be imposed on the student. But with them will come augmented honour, more brilliant success, higher consideration, and greater rewards.

Society is awakening to the true nature of our science, and more justly estimates the merits of its professors. Medical skill

is not a gift of nature or an accidental endowment. It is the result of a well educated and disciplined mind, acting on comprehensive stores of knowledge; and knowledge is the fruit of laborious application and incessant research.

Lessen your exertions now, refuse to meet and overcome the scientific difficulties of your profession, preferring inglorious ease to well directed exertion, and you reap hereafter shame; sink into an humbling mediocrity, from which you never rise to fortune or to fame.

Can this reform be much longer postponed? I believe not. The interests of the profession—the immediate pecuniary interests of practitioners, are too deeply implicated, to admit that things should long continue in their present state. It cannot be concealed, that public confidence in the knowledge and intelligence of the profession has been shaken—has been most materially impaired in some sections of the country. Every where does empiricism abound. In many districts it is warmly patronized and encouraged, not by the vulgar and ignorant only, but by the respected and intelligent; and, in one state, I believe, has been legalized by statute. The ancient Galenical empiricism, long supposed completely at an end, is, in part, resuscitated; if not with all of its olden frivolities, with those not less extravagant of modern date. Whence arises this state of things? Is it not from the observation, too apparent to the public, of the inferior grade of medical instruction? Do they perceive that wide difference in the acquirements of the regularly educated practitioner, and the empirical pretender, which should always distinguish them? In the regular practice, has not the treatment of disease too much degenerated into a blind routine, pursued in nearly every disease, however dissimilar in nature? Can it be denied, but that the only difference between the regular practice and empirical practice, is a routine treatment of merely different remedies, and not always to the disadvantage of the empirical method? In an arithmetical

estimate, I apprehend, in the long run, the calculation of chances, by either plan, may appear equal; and then the difference in cost, will decide the preference.

There is but one mode of rescuing our profession from so degrading a rivalry; and that is, to raise the medical instruction of our country to a level with the philosophic character belonging to our science. Let medicine be, what in reality it is, a science of calculation, of combination, of induction, the elements of which are deduced from the phenomena of organized beings, and the relations of exterior agents with them, and you rise so infinitely above the crude and incorrect proceedings of empirical art, that the intelligent and observant, can never be deceived by its vain boastings, or its illusory pretensions.

A radical reform in medical education must before long be undertaken. It is not to be our task—we have done our duty, in showing its necessity. It belongs to a rising generation—on you may and ought to devolve the important task of effecting it. It is the young, the ardent, the zealous, and devoted, who undertake and succeed in great and important changes; and no work of greater magnitude, of deeper and more lasting consequences, could crown your well directed exertions. To erect a system of medical education on the basis of positive philosophy, would place under obligations to you of the profoundest nature, society, your country, and the world. There is no achievement more worthy the measure of rational and honest ambition, or would surround its successful result with a brighter halo of imperishable renown. Let this be your work and such your reward.

APPENDIX.

THE following list comprises the Faculty of Medicine of the Academy of Paris. It exhibits the courses of Medical Lectures delivered in that institution, in some measure indicates the character of medical instruction in that great emporium of science, and strongly contrasts with the meagre provisions of the schools of this country.

The faculty is composed of twenty-four professors, to whom are added an equal number of adjuncts (agrégés). The whole period of instruction consists of thirteen courses, which are divided into the winter and summer seasons. The winter courses commence November 2d, and are as follow:—

FOR 1833.

COURSES.	PROFESSORS.
Anatomy,	Cruveilheir.
Physiology,	Bérard.
Medical Chemistry,	Orfila.
Surgical Pathology,	Cloquet, Marjolin.
Medical Pathology,	Duméril, Andral.
Gen'l Pathology and Therapeutics,	Broussais.
Operations and Instruments,	Richerand.
Clinical Surgery,	Boyer, Roux, Dupuytren, Jules Cloquet.
Clinical Medicine,	Rostan, Fouquier, Bouillaud. Chomel.

The summer courses commence April 2d, and are as follow:

COURSES.	PROFESSORS.
Medical Physics,	Pelletan.
Midwifery and Diseases of Women and Children,	Moreau.
Pharmacy,	Deyeux.
Surgical Pathology,	Marjolin, Jules Cloquet.
Medical Natural History,	Richard.
Hygeine,	Des Genettes.
Legal Medicine,	Adelon.
Medical Pathology,	Duméril, Andral.
Therapeutics and Materia Medica,	Alibert.
Clinical Surgery,	Boyer, Roux, Dupuytren, Dubois.
Clinical Medicine,	Leroux, Fouquier, Chomel, Bouillaud.
Clinical Midwifery,	

The adjuncts are elected by competition (au conçours) to the number of twelve every three years. The period of their service is six years, divided into two periods of three years each. After the expiration of their service, they are Free Adjuncts. The professors are nominated only from those who have served as adjuncts, and no other can receive authority from the Grand Master to open private courses. The adjuncts in actual employment, supply the place of the professors in teaching, and they assist at the examinations.

The adjuncts are divided as follows:—

SECTION OF MEDICINE.

TEN ADJUNCTS.

Pathology, 2; Hygeine, 1; Therapeutics, 1; Clinical courses, 4; Legal Medicine, 1; without specified duties, 1.

SECTION OF SURGERY.

EIGHT ADJUNCTS.

Pathology, 2; Operations and Instruments, 1; Clinical courses, 3; Midwifery, 1; Clinical Midwifery, 1.

SECTION OF ACCESSORY SCIENCES.

Anatomy, 1; Physiology, 1; Medical Physics, 1; Chemistry, 1; Medical Natural History, 1; Pharmocology, 1.

ADJUNCTS (AGRÉGÉS) IN EMPLOYMENT, 1833.

MM. Bayle,
Bérard, (Auguste.)
Blandin,
Boyer, (Philippe.)
Briquet,
Brongniart,
Broussais, (Cassimir.)
Cottereau,
Dalmas,
Dubled,
Guérard,
Hatin,
Hourmann,
Jobert,
Laugier,
Lesueur,
Martin Solon,
Piorry,
Regnier,
Sanson, (Ainé.)
Sanson, (Alphonse.)
Royer Collard,
Trousseau.

In addition to the regular lectures of the University, there are between forty and fifty private lectures delivered by the adjuncts, both the employed and unemployed, (agrégés en exercise et libres.)

The University of Paris has undergone repeated revisions, and the courses of instruction have been enlarged, with the expansions produced by the progress of scientific knowledge. The absence of this expansive character adapted to the progressive movement of science and the age, is the great defect of all our institutions for instruction. At this moment, a new revision in the medical department is in actual progress. The minister of Public Instruction some time past, appointed a commission, the members of which were MM. Cuvier, President; Richerand, Duméril, Andral, Husson, Jules Cloquet and Jules Guérin. These commissioners were directed to institute a preparatory examination into all questions relative to a new organization of the Medical Faculty of Paris.

This commission, in their report, recommended the establishment of the following chairs, courses of lectures, and number of professors:—

1. History of Medicine—one professor.
2. General, Comparative, and Pathological Anatomy—one professor.
3. Descriptive Anatomy—one professor.
4. Physiology—one professor.
5. Medical Physics—one professor.

6. Medical Chemistry—one professor.
7. Medical Natural History—one professor.
8. Materia Medica and Pharmacy—one professor.
9. Public and Private Hygeine—one professor.
10. Medical Jurisprudence—one professor.
11. General Pathology and Therapeutics—one professor.
12. Surgical Pathology—two professors.
13. Medical Pathology—two professors.
14. Operative Surgery—two professors.
15. Midwifery, Diseases of Lying-in-women and new-born infants—one professor.
16. Medical Clinic—four professors.
17. Surgical Clinic—three professors.
18. Midwifery Clinic—one professor.
19. Clinic for Diseases of Infants—one professor.
20. Clinic for Cutaneous, Scrofulous, Syphilitic Diseases—one professor.

The professors are to be elected by conçours, and on the following evidence of qualification—1. An estimate of the antecedent medical titles and works of each candidate. 2. A printed dissertation, the subject of which shall be relative to the course of instruction, and which ought to be printed and published in the period of twenty days. 3. A general lecture, in which each candidate will expose the plan and method he proposes to follow, in the course he contemplates to deliver 4. A special lecture, on a subject determined and drawn by lot, and which will always be relative to the subject of the chair, the object of competition.

"The commission has also provided for cases in which it would become necessary that the public should silence private interests; and, that a professor, burthened with years, who is no longer in a state to follow the progress of science, to march on with the movement of instruction, and to be further useful to the pupils, it has fixed the period of retirement from the chair at sixty years." —*Journal Universel et Hebdomadaire.*

For the organization of the German Universities, and the ample provision of lectures, especially in the medical department, I would refer the reader to a note appended to the article "Universities," in the Encyclopædia Americana.